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02 April 2004
File no.:030201/30009-0010
Ref.: AG

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Comments of Denmark on "Energy Star® Qualified Imaging Equipment. Specification Revision. Directional Draft"

Introduction

This document has been prepared by the DEA (Danish Energy Authority) as a response to invitation by the European Commission and the US EPA to comment on the "Energy Star® Qualified Imaging Equipment. Specification Revision. Directional Draft".

DEA has been carrying out a brief study on energy labelling of imaging equipment based on the Danish market situation and will be issuing a report shortly. Some preliminary results from the report are provided in this document.

Objectives of the Energy Label Criteria

The overall objective of the energy label criteria is to achieve as much electricity saving as possible within the imaging technology product group maintaining the desired service level for the users of the technology and at an economically profitable level including both additional production costs, if any, and reduced operational costs.

The immediate objectives are that the specification

- should identify for the consumers the top end appliances regarding energy efficiency;
- should be an incentive for the manufacturers to design the products with respect to low electricity consumption and to use possible new promising energy saving technologies;
- should focus on the commonly used product types;
- should focus on the most important power modes regarding electricity consumption;

- should be as simple and understandable as possible, both for the consumers and the suppliers, and
- should be easy to update dynamically following the market transformation consequences and the technological development.

Principles on the Revision Process

Denmark urges the US EPA to have the revised specification being prepared in collaboration between the US EPA and the European Commission following the agreement on energy efficiency labelling programme for office equipment. Denmark suggests to set up a technical working group for the further revision work with members from the US EPA, European Commission, the EU Member States, the industry and possible other relevant parties.

Denmark furthermore proposes the US EPA to focus and prioritise the efforts on areas with largest energy consumption and saving potential. DEA's imaging equipment study combined sales data with estimations on usage patterns and on power consumption in the various modes, which among other results showed the following:

- About 90 percent of the total power consumption for copiers and printers takes place in monochrome and colour digital copiers and printers with laser engines or similar in the office segment.
- For the above mentioned copiers and printers about 70 to 80 percent of the annual power consumption takes place in the ready mode (i.e. the printer is ready to produce a print or copy)

The technological development could change these shares. Furthermore, due to uncertainties in the data material, the resulting figures are also with uncertainties.

However, the conclusion is anyhow that most focus should be put on areas with largest energy saving possibilities.

Product Groups

DEA supports the proposed merger of the various product groups into one product group for all imaging equipment.

DEA proposes further that product groups will be composed according to the output or service provided by the device and not the specific technology. However, for distinguishing between laser (and similar) and inkjet (and similar) marking technologies, the most easy definition is to use the technology because any other description of differences in quality, speed etc. would be difficult.

Based on this DEA proposes the following main product groups:

- Monochrome digital copier, copier-printers and printers based on laser (electrophotography) technology (including LED, solid ink etc.)
- Color digital copier, copier-printers and printers laser (serial and parallel electrophotography) technology (including LED, solid ink etc.)
- Other technologies (ink jet, monochrome thermal transfer, dye sublimation, impact)
- Stand-alone scanners
- Stand-alone fax machines

Analogue copiers may be left out, because the market share is diminishing and the share of total power consumption is minimal. It could also be considered to leave out matrix printers. Regarding mailing machines it was not included in the DEA study, but the share of total consumption is assumed to be minimal.

The copiers, copier-printers (i.e. MFDs) and printers (with heating technology) may be treated as one product groups. For the production mode and, to a minor degree, the ready mode, additional power allowance could be given to the scanning function for copiers and copier-printers, and to the controller part of copier-printers, especially for colour copier-printers, which have a larger controller.

Fax reception function could also have an additional allowance for the sleep modes.

Finishing treatment equipment such as staplers may be kept out of the criteria and no additional allowance is needed.

For the other technologies MFDs could similarly be treated as one product group.

Modes

DEA recommends the US EPA to study in more details the consequences of using a duty cycle approach. Problem in using the duty cycle arise when the users have different usage pattern compared to the pattern used in the testing procedure. DEA has been informed by Danish suppliers that especially in the medium sized copier, copier-printer and printer group the usage pattern could vary a lot from consumer to consumer for the same types of machines. Differences in the annual print/copy volume could be of a factor ten for the same machine. This makes the use of duty cycle less precise.

In all cases, a duty cycle should be combined with low power consumption in off and standby modes.

DEA furthermore recommends the US EPA to use a clear naming, which is in accordance with the terminology used of the suppliers and customers. E.g. the term “standby” is used by the industry for the ready mode.

Criteria Levels

Levels should be stringent and complying with Energy Star's overall target of labelling 25 percent of the marketed appliances.

However, at the same time US EPA could study possible existing and new energy saving technologies and set the levels in accordance with these technologies.

One very good example of this is the fusing technology used in laser engines. One supplier in the DEA study gave the following information for two copier-printers of approximately same size:

- Model 1: Sleep mode power consumption: 5 W, recovery time from sleep to ready: 4 minutes.
- Model 2: Sleep mode power consumption: 97 W, recovery time from sleep to ready: 4 minutes.

Model 1 has thus reduced the sleep mode consumption with a factor 20 without increasing the recovery time. Fusing technology with low weight material and an effective heat source, infrared in this case, is used by the manufacturer, which makes it possible to reduce the temperature of the fusing unit and thereby the power consumption for heating the fusing unit without increasing the recovery time.

Another promising new technology for fast heating of the fusing device is induction heat technology.

Fast heating technologies may also be used for reducing power consumption in the ready mode.

Default times and recovery times

Default times and recovery times are very closed linked to energy savings for copiers, copier-printers and printers with laser engines, solid ink etc. Recovery times should first of all be low in order that the users will accept that the machines go into power saving modes. With low recovery times, the default times could be around 15 minutes without risking that the consumers increase the default times.

A new energy saving technology is the self-learning default time control. This control records how the users are using the machine over a period and then automatically switches on and off the machine according to this pattern. E.g. if the users normally stop working at 18:00 on weekdays apart from Thursdays where they work till 20:00, the machine automati-

cally goes into the auto-off mode shortly after these times without needing to wait the full default times.

In these considerations larger machines are excluded, which are in the production mode most of the time.

Annual Revision of Criteria

DEA recommends that the US EPA once a year compares the criteria with the market development and new technological developments within the area and adjust the criteria accordingly if necessary.

Yours sincerely

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